New Jersey
ACCUTEST
LABORATORIES

07/30/14

Technical Report for

Stantec Consulting Services Inc.

Sunoco - Marcus Hook Facility, PA

213402353

Accutest Job Number: JB51293

Sampling Date: 10/25/13

Report to:

Stantec

Lisa.Votta@stantec.com

ATTN: Lisa Votta

Total number of pages in report: **34**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Nancy Cole
Laboratory Director

Client Service contact: Marie Meidhof 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), PA, RI, SC, TN, VA, WV, DoD ELAP (L-A-B L2248)

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# Sample Summary

Stantec Consulting Services Inc.

**Job No:** JB51293

Sunoco - Marcus Hook Facility, PA
Project No: 213402353

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| JB51293-1 | 10/25/13 | 08:35 | JC | 10/25/13 | SO | Soil | MH835-1 (1.0-1.5) |
| JB51293-2 | 10/25/13 | 09:05 | JC | 10/25/13 | SO | Soil | MH835-2 (1.5-2.0) |
| JB51293-3 | 10/25/13 | 09:20 | JC | 10/25/13 | SO | Soil | MH835-3 (1.75-2.25) |
| JB51293-4 | 10/25/13 | 09:45 | JC | 10/25/13 | SO | Soil | MH835-4 (1.5-2.0) |
| JB51293-5 | 10/25/13 | 11:15 | JC | 10/25/13 | SO | Soil | MH813-1 (3.0-3.5) |
| JB51293-6 | 10/25/13 | 14:05 | JC | 10/25/13 | SO | Soil | MH813-2 (1.5-2.0) |
| JB51293-7 | 10/25/13 | 12:55 | JC | 10/25/13 | SO | Soil | MH813-3 (1.75-2.25) |
| JB51293-8 | 10/25/13 | 13:35 | JC | 10/25/13 | SO | Soil | MH813-4 (3.0-3.5) |
| JB51293-9 | 10/25/13 | 14:20 | JC | 10/25/13 | AQ | Field Blank Soil | FB10252013 |
| JB51293-10 | 10/25/13 | 14:20 | JC | 10/25/13 | AQ | Trip Blank Soil | TB10252013 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# CASE NARRATIVE / CONFORMANCE SUMMARY

| | | | |
|---|---|---|---|
| **Client:** | Stantec Consulting Services Inc. | **Job No** | JB51293 |
| **Site:** | Sunoco - Marcus Hook Facility, PA | **Report Date** | 11/21/2013 9:01:35 A |

On 10/25/2013, 8 Sample(s), 1 Trip Blank(s) and 1 Field Blank(s) were received at Accutest Laboratories at a temperature of 3.3 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB51293 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

## Volatiles by GCMS By Method DAI BY GC/MS 8260SIM

**Matrix:** AQ **Batch ID:** EH4576

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB51355-3MS, JB51355-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Propylene Glycol are outside control limits. High percent recoveries and no associated positive reported in the QC batch.
- Matrix Spike Duplicate Recovery(s) for Propylene Glycol are outside control limits. High percent recoveries and no associated positive reported in the QC batch.

**Matrix:** SO **Batch ID:** EH4575

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB50370-2MS, JB50370-2MSD were used as the QC samples indicated.
- Matrix Spike Duplicate Recovery(s) for Propylene Glycol are outside control limits.

## Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ **Batch ID:** V4B1558

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB51252-2MS, JB51252-2MSD were used as the QC samples indicated.

**Matrix:** AQ **Batch ID:** V4B1562

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB51781-1MS, JB51781-1MSD were used as the QC samples indicated.

**Matrix:** SO **Batch ID:** VY6050

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB51379-2MS, JB51379-2MSD were used as the QC samples indicated.

**Matrix:** SO **Batch ID:** VY6051

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB51293-6DUP, JB51293-8MS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Extractables by GCMS By Method SW846 8270D

**Matrix:** AQ **Batch ID:** OP70201

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

**Matrix:** SO **Batch ID:** OP70200

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB51306-6MS, JB51306-6MSD were used as the QC samples indicated.
- OP70200-MB1 for Nitrobenzene-d5: Outside of in house control limits, but within reasonable method recovery limits.
- OP70200-MB1 for 2-Fluorobiphenyl: Outside of in house control limits, but within reasonable method recovery limits.

## Extractables by GC By Method SW846 8015C

**Matrix:** AQ **Batch ID:** OP70166

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB51161-13MS, JB51161-13MSD were used as the QC samples indicated.

**Matrix:** SO **Batch ID:** OP70211

- All samples were extracted within the recommended method holding time.
- Sample(s) JB51293-5MS, JB51293-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method ASTM 4643-00

**Matrix:** SO **Batch ID:** GN94667

- The data for ASTM 4643-00 meets quality control requirements.

## Wet Chemistry By Method SM2540 G-97

**Matrix:** SO **Batch ID:** GN94117

- The data for SM2540 G-97 meets quality control requirements.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

# Summary of Hits



**Job Number:** JB51293
**Account:** Stantec Consulting Services Inc.
**Project:** Sunoco - Marcus Hook Facility, PA
**Collected:** 10/25/13



| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| **JB51293-1** | **MH835-1 (1.0-1.5)** | | | | | |
| No hits reported in this sample. | | | | | | |
| **JB51293-2** | **MH835-2 (1.5-2.0)** | | | | | |
| No hits reported in this sample. | | | | | | |
| **JB51293-3** | **MH835-3 (1.75-2.25)** | | | | | |
| No hits reported in this sample. | | | | | | |
| **JB51293-4** | **MH835-4 (1.5-2.0)** | | | | | |
| No hits reported in this sample. | | | | | | |
| **JB51293-5** | **MH813-1 (3.0-3.5)** | | | | | |
| Xylene (total) | | 0.71 J | 0.93 | 0.16 | ug/kg | SW846 8260B |
| Acenaphthene | | 19.9 J | 39 | 11 | ug/kg | SW846 8270D |
| Anthracene | | 23.8 J | 39 | 14 | ug/kg | SW846 8270D |
| Benzo(a)anthracene | | 38.3 J | 39 | 13 | ug/kg | SW846 8270D |
| Benzo(a)pyrene | | 52.4 | 39 | 12 | ug/kg | SW846 8270D |
| Benzo(b)fluoranthene | | 34.8 J | 39 | 13 | ug/kg | SW846 8270D |
| Chrysene | | 47.1 | 39 | 13 | ug/kg | SW846 8270D |
| Fluoranthene | | 59.0 | 39 | 17 | ug/kg | SW846 8270D |
| Indeno(1,2,3-cd)pyrene | | 37.4 J | 39 | 13 | ug/kg | SW846 8270D |
| Phenanthrene | | 42.0 | 39 | 18 | ug/kg | SW846 8270D |
| Pyrene | | 82.8 | 39 | 15 | ug/kg | SW846 8270D |
| TPH-DRO (C10-C28) | | 184 | 11 | 4.0 | mg/kg | SW846 8015C |
| **JB51293-6** | **MH813-2 (1.5-2.0)** | | | | | |
| TPH-DRO (C10-C28) | | 58.4 | 10 | 3.9 | mg/kg | SW846 8015C |
| **JB51293-7** | **MH813-3 (1.75-2.25)** | | | | | |
| Benzene | | 2.8 | 0.99 | 0.12 | ug/kg | SW846 8260B |
| Toluene | | 1.1 | 0.99 | 0.14 | ug/kg | SW846 8260B |
| Ethylbenzene | | 3.0 | 0.99 | 0.17 | ug/kg | SW846 8260B |
| Xylene (total) | | 2.6 | 0.99 | 0.18 | ug/kg | SW846 8260B |
| Acenaphthene | | 53.7 | 35 | 10 | ug/kg | SW846 8270D |
| Anthracene | | 43.4 | 35 | 12 | ug/kg | SW846 8270D |
| Benzo(a)anthracene | | 65.9 | 35 | 11 | ug/kg | SW846 8270D |
| Benzo(a)pyrene | | 59.9 | 35 | 11 | ug/kg | SW846 8270D |

# Summary of Hits

**Job Number:** JB51293
**Account:** Stantec Consulting Services Inc.
**Project:** Sunoco - Marcus Hook Facility, PA
**Collected:** 10/25/13



| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | | 74.3 | 35 | 12 | ug/kg | SW846 8270D |
| Benzo(k)fluoranthene | | 28.0 J | 35 | 13 | ug/kg | SW846 8270D |
| Chrysene | | 77.9 | 35 | 12 | ug/kg | SW846 8270D |
| Fluoranthene | | 161 | 35 | 15 | ug/kg | SW846 8270D |
| Fluorene | | 71.1 | 35 | 11 | ug/kg | SW846 8270D |
| Indeno(1,2,3-cd)pyrene | | 36.2 | 35 | 12 | ug/kg | SW846 8270D |
| Naphthalene | | 38.0 | 35 | 9.5 | ug/kg | SW846 8270D |
| Phenanthrene | | 190 | 35 | 16 | ug/kg | SW846 8270D |
| Pyrene | | 114 | 35 | 13 | ug/kg | SW846 8270D |
| TPH-DRO (C10-C28) | | 229 | 11 | 4.2 | mg/kg | SW846 8015C |
| **JB51293-8** | **MH813-4 (3.0-3.5)** | | | | | |
| Anthracene | | 15.4 J | 37 | 13 | ug/kg | SW846 8270D |
| Benzo(a)anthracene | | 44.1 | 37 | 12 | ug/kg | SW846 8270D |
| Benzo(a)pyrene | | 43.4 | 37 | 11 | ug/kg | SW846 8270D |
| Benzo(b)fluoranthene | | 48.9 | 37 | 12 | ug/kg | SW846 8270D |
| Benzo(k)fluoranthene | | 18.0 J | 37 | 14 | ug/kg | SW846 8270D |
| Chrysene | | 41.1 | 37 | 13 | ug/kg | SW846 8270D |
| Fluoranthene | | 77.5 | 37 | 16 | ug/kg | SW846 8270D |
| Indeno(1,2,3-cd)pyrene | | 20.5 J | 37 | 13 | ug/kg | SW846 8270D |
| Phenanthrene | | 34.4 J | 37 | 17 | ug/kg | SW846 8270D |
| Pyrene | | 61.3 | 37 | 14 | ug/kg | SW846 8270D |
| TPH-DRO (C10-C28) | | 59.9 | 11 | 4.3 | mg/kg | SW846 8015C |

**JB51293-9** **FB10252013**

No hits reported in this sample.

**JB51293-10** **TB10252013**

No hits reported in this sample.

New Jersey ACCUTEST LABORATORIES

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## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH835-1 (1.0-1.5) | | |
| **Lab Sample ID:** | JB51293-1 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | DAI BY GC/MS 8260SIM | **Percent Solids:** | 83.4 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | H103483.D | 1 | 10/31/13 | KLS | n/a | n/a | EH4575 |
| Run #2 | | | | | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 107-21-1 | Ethylene Glycol | ND | 0.59 | 0.11 | mg/kg | |
| 57-55-6 | Propylene Glycol | ND | 0.59 | 0.060 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 111-27-3 | Hexanol | 140% | | 50-150% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH835-2 (1.5-2.0) | | |
| **Lab Sample ID:** | JB51293-2 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | DAI BY GC/MS 8260SIM | **Percent Solids:** | 86.5 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | H103484.D | 1 | 10/31/13 | KLS | n/a | n/a | EH4575 |
| Run #2 | | | | | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 107-21-1 | Ethylene Glycol | ND | 0.57 | 0.10 | mg/kg | |
| 57-55-6 | Propylene Glycol | ND | 0.57 | 0.058 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 111-27-3 | Hexanol | 130% | | 50-150% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH835-3 (1.75-2.25) | | |
| **Lab Sample ID:** | JB51293-3 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | DAI BY GC/MS 8260SIM | **Percent Solids:** | 79.2 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | H103485.D | 1 | 10/31/13 | KLS | n/a | n/a | EH4575 |
| Run #2 | | | | | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 107-21-1 | Ethylene Glycol | ND | 0.63 | 0.11 | mg/kg | |
| 57-55-6 | Propylene Glycol | ND | 0.63 | 0.064 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 111-27-3 | Hexanol | 115% | | 50-150% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH835-4 (1.5-2.0) | | |
| **Lab Sample ID:** | JB51293-4 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | DAI BY GC/MS 8260SIM | **Percent Solids:** | 81.3 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | H103486.D | 1 | 10/31/13 | KLS | n/a | n/a | EH4575 |
| Run #2 | | | | | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 107-21-1 | Ethylene Glycol | ND | 0.61 | 0.11 | mg/kg | |
| 57-55-6 | Propylene Glycol | ND | 0.61 | 0.062 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 111-27-3 | Hexanol | 104% | | 50-150% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH813-1 (3.0-3.5) | | |
| **Lab Sample ID:** | JB51293-5 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8260B | **Percent Solids:** | 81.8 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | Y139992.D | 1 | 10/29/13 | PS | n/a | n/a | VY6050 |
| Run #2 | | | | | | | |

| | Initial Weight |
|---|---|
| Run #1 | 6.6 g |
| Run #2 | |

**Purgeable Aromatics**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | 0.93 | 0.12 | ug/kg | |
| 108-88-3 | Toluene | ND | 0.93 | 0.13 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.93 | 0.16 | ug/kg | |
| 1330-20-7 | Xylene (total) | 0.71 | 0.93 | 0.16 | ug/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 59-130% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 93% | | 65-123% |
| 2037-26-5 | Toluene-D8 | 114% | | 80-124% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | | 71-132% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** MH813-1 (3.0-3.5)
**Lab Sample ID:** JB51293-5
**Matrix:** SO - Soil
**Method:** SW846 8270D SW846 3550C
**Project:** Sunoco - Marcus Hook Facility, PA

**Date Sampled:** 10/25/13
**Date Received:** 10/25/13
**Percent Solids:** 81.8

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 3P26425.D | 1 | 11/03/13 | NAP | 10/29/13 | OP70200 | E3P1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 31.6 g | 1.0 ml |
| Run #2 | | |

**BN PAH List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 83-32-9 | Acenaphthene | 19.9 | 39 | 11 | ug/kg | J |
| 120-12-7 | Anthracene | 23.8 | 39 | 14 | ug/kg | J |
| 56-55-3 | Benzo(a)anthracene | 38.3 | 39 | 13 | ug/kg | J |
| 50-32-8 | Benzo(a)pyrene | 52.4 | 39 | 12 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | 34.8 | 39 | 13 | ug/kg | J |
| 207-08-9 | Benzo(k)fluoranthene | ND | 39 | 15 | ug/kg | |
| 218-01-9 | Chrysene | 47.1 | 39 | 13 | ug/kg | |
| 206-44-0 | Fluoranthene | 59.0 | 39 | 17 | ug/kg | |
| 86-73-7 | Fluorene | ND | 39 | 13 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 37.4 | 39 | 13 | ug/kg | J |
| 91-20-3 | Naphthalene | ND | 39 | 11 | ug/kg | |
| 85-01-8 | Phenanthrene | 42.0 | 39 | 18 | ug/kg | |
| 129-00-0 | Pyrene | 82.8 | 39 | 15 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 81% | | 10-110% |
| 321-60-8 | 2-Fluorobiphenyl | 88% | | 17-110% |
| 1718-51-0 | Terphenyl-d14 | 97% | | 30-124% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH813-1 (3.0-3.5) | | |
| **Lab Sample ID:** | JB51293-5 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8015C SW846 3546 | **Percent Solids:** | 81.8 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2Z34988.D | 1 | 10/30/13 | AV | 10/29/13 | OP70211 | G2Z1348 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 11.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-DRO (C10-C28) | 184 | 11 | 4.0 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 90% | | 13-142% |
| 16416-32-3 | Tetracosane-d50 | 87% | | 12-141% |
| 438-22-2 | 5a-Androstane | 77% | | 13-142% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH813-2 (1.5-2.0) | | |
| **Lab Sample ID:** | JB51293-6 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8260B | **Percent Solids:** | 90.9 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | Y140003.D | 1 | 10/30/13 | PS | n/a | n/a | VY6051 |
| Run #2 | | | | | | | |

| | Initial Weight |
|---|---|
| Run #1 | 5.6 g |
| Run #2 | |

**Purgeable Aromatics**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | 0.98 | 0.12 | ug/kg | |
| 108-88-3 | Toluene | ND | 0.98 | 0.14 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.98 | 0.17 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.98 | 0.17 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | | 59-130% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 94% | | 65-123% |
| 2037-26-5 | Toluene-D8 | 112% | | 80-124% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | | 71-132% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH813-2 (1.5-2.0) | | |
| **Lab Sample ID:** | JB51293-6 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8270D SW846 3550C | **Percent Solids:** | 90.9 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 3P26341.D | 1 | 10/31/13 | CH | 10/29/13 | OP70200 | E3P1121 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 34.1 g | 1.0 ml |
| Run #2 | | |

**BN PAH List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 83-32-9 | Acenaphthene | ND | 32 | 9.4 | ug/kg | |
| 120-12-7 | Anthracene | ND | 32 | 11 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 32 | 11 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 32 | 9.8 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 32 | 11 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 32 | 12 | ug/kg | |
| 218-01-9 | Chrysene | ND | 32 | 11 | ug/kg | |
| 206-44-0 | Fluoranthene | ND | 32 | 14 | ug/kg | |
| 86-73-7 | Fluorene | ND | 32 | 11 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 32 | 11 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 32 | 8.8 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 32 | 15 | ug/kg | |
| 129-00-0 | Pyrene | ND | 32 | 12 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 83% | | 10-110% |
| 321-60-8 | 2-Fluorobiphenyl | 90% | | 17-110% |
| 1718-51-0 | Terphenyl-d14 | 85% | | 30-124% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** MH813-2 (1.5-2.0)
**Lab Sample ID:** JB51293-6
**Matrix:** SO - Soil
**Method:** SW846 8015C SW846 3546
**Project:** Sunoco - Marcus Hook Facility, PA

**Date Sampled:** 10/25/13
**Date Received:** 10/25/13
**Percent Solids:** 90.9

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2Y57003.D | 1 | 10/29/13 | AV | 10/29/13 | OP70211 | G2Y2234 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 10.8 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-DRO (C10-C28) | 58.4 | 10 | 3.9 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 77% | | 13-142% |
| 16416-32-3 | Tetracosane-d50 | 69% | | 12-141% |
| 438-22-2 | 5a-Androstane | 74% | | 13-142% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH813-3 (1.75-2.25) | | |
| **Lab Sample ID:** | JB51293-7 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8260B | **Percent Solids:** | 82.9 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | Y139993.D | 1 | 10/29/13 | PS | n/a | n/a | VY6050 |
| Run #2 | | | | | | | |

| | Initial Weight |
|---|---|
| Run #1 | 6.1 g |
| Run #2 | |

**Purgeable Aromatics**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | 2.8 | 0.99 | 0.12 | ug/kg | |
| 108-88-3 | Toluene | 1.1 | 0.99 | 0.14 | ug/kg | |
| 100-41-4 | Ethylbenzene | 3.0 | 0.99 | 0.17 | ug/kg | |
| 1330-20-7 | Xylene (total) | 2.6 | 0.99 | 0.18 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | | 59-130% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 95% | | 65-123% |
| 2037-26-5 | Toluene-D8 | 115% | | 80-124% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | | 71-132% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH813-3 (1.75-2.25) | | |
| **Lab Sample ID:** | JB51293-7 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8270D SW846 3550C | **Percent Solids:** | 82.9 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 3P26334.D | 1 | 10/31/13 | CH | 10/29/13 | OP70200 | E3P1121 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 34.5 g | 1.0 ml |
| Run #2 | | |

**BN PAH List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 83-32-9 | Acenaphthene | 53.7 | 35 | 10 | ug/kg | |
| 120-12-7 | Anthracene | 43.4 | 35 | 12 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | 65.9 | 35 | 11 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | 59.9 | 35 | 11 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | 74.3 | 35 | 12 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | 28.0 | 35 | 13 | ug/kg | J |
| 218-01-9 | Chrysene | 77.9 | 35 | 12 | ug/kg | |
| 206-44-0 | Fluoranthene | 161 | 35 | 15 | ug/kg | |
| 86-73-7 | Fluorene | 71.1 | 35 | 11 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 36.2 | 35 | 12 | ug/kg | |
| 91-20-3 | Naphthalene | 38.0 | 35 | 9.5 | ug/kg | |
| 85-01-8 | Phenanthrene | 190 | 35 | 16 | ug/kg | |
| 129-00-0 | Pyrene | 114 | 35 | 13 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 95% | | 10-110% |
| 321-60-8 | 2-Fluorobiphenyl | 91% | | 17-110% |
| 1718-51-0 | Terphenyl-d14 | 86% | | 30-124% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH813-3 (1.75-2.25) | | |
| **Lab Sample ID:** | JB51293-7 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8015C SW846 3546 | **Percent Solids:** | 82.9 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2Y57004.D | 1 | 10/30/13 | AV | 10/29/13 | OP70211 | G2Y2234 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 10.9 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-DRO (C10-C28) | 229 | 11 | 4.2 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 87% | | 13-142% |
| 16416-32-3 | Tetracosane-d50 | 79% | | 12-141% |
| 438-22-2 | 5a-Androstane | 84% | | 13-142% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH813-4 (3.0-3.5) | | |
| **Lab Sample ID:** | JB51293-8 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8260B | **Percent Solids:** | 86.8 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | Y140004.D | 1 | 10/30/13 | PS | n/a | n/a | VY6051 |
| Run #2 | | | | | | | |

| | Initial Weight |
|---|---|
| Run #1 | 6.4 g |
| Run #2 | |

**Purgeable Aromatics**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | 0.90 | 0.11 | ug/kg | |
| 108-88-3 | Toluene | ND | 0.90 | 0.13 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.90 | 0.16 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.90 | 0.16 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | | 59-130% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 99% | | 65-123% |
| 2037-26-5 | Toluene-D8 | 114% | | 80-124% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | | 71-132% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH813-4 (3.0-3.5) | | |
| **Lab Sample ID:** | JB51293-8 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8270D SW846 3550C | **Percent Solids:** | 86.8 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 3P26335.D | 1 | 10/31/13 | CH | 10/29/13 | OP70200 | E3P1121 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.9 g | 1.0 ml |
| Run #2 | | |

**BN PAH List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 83-32-9 | Acenaphthene | ND | 37 | 11 | ug/kg | |
| 120-12-7 | Anthracene | 15.4 | 37 | 13 | ug/kg | J |
| 56-55-3 | Benzo(a)anthracene | 44.1 | 37 | 12 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | 43.4 | 37 | 11 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | 48.9 | 37 | 12 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | 18.0 | 37 | 14 | ug/kg | J |
| 218-01-9 | Chrysene | 41.1 | 37 | 13 | ug/kg | |
| 206-44-0 | Fluoranthene | 77.5 | 37 | 16 | ug/kg | |
| 86-73-7 | Fluorene | ND | 37 | 12 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 20.5 | 37 | 13 | ug/kg | J |
| 91-20-3 | Naphthalene | ND | 37 | 10 | ug/kg | |
| 85-01-8 | Phenanthrene | 34.4 | 37 | 17 | ug/kg | J |
| 129-00-0 | Pyrene | 61.3 | 37 | 14 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 84% | | 10-110% |
| 321-60-8 | 2-Fluorobiphenyl | 91% | | 17-110% |
| 1718-51-0 | Terphenyl-d14 | 84% | | 30-124% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MH813-4 (3.0-3.5) | | |
| **Lab Sample ID:** | JB51293-8 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | SO - Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8015C SW846 3546 | **Percent Solids:** | 86.8 |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2Y57005.D | 1 | 10/30/13 | AV | 10/29/13 | OP70211 | G2Y2234 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 10.1 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-DRO (C10-C28) | 59.9 | 11 | 4.3 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 84% | | 13-142% |
| 16416-32-3 | Tetracosane-d50 | 78% | | 12-141% |
| 438-22-2 | 5a-Androstane | 81% | | 13-142% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | FB10252013 | | |
| **Lab Sample ID:** | JB51293-9 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | AQ - Field Blank Soil | **Date Received:** | 10/25/13 |
| **Method:** | DAI BY GC/MS 8260SIM | **Percent Solids:** | n/a |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | H103489.D | 1 | 10/31/13 | KLS | n/a | n/a | EH4576 |
| Run #2 | | | | | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 107-21-1 | Ethylene Glycol | ND | 0.50 | 0.063 | mg/l | |
| 57-55-6 | Propylene Glycol | ND | 0.50 | 0.096 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 111-27-3 | Hexanol | 77% | | 50-150% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | FB10252013 | | |
| **Lab Sample ID:** | JB51293-9 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | AQ - Field Blank Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 4B35817.D | 1 | 10/30/13 | TP | n/a | n/a | V4B1558 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**Purgeable Aromatics**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | 1.0 | 0.28 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.44 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.21 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.19 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | | 79-117% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 90% | | 72-123% |
| 2037-26-5 | Toluene-D8 | 96% | | 82-118% |
| 460-00-4 | 4-Bromofluorobenzene | 88% | | 75-118% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | FB10252013 | | |
| **Lab Sample ID:** | JB51293-9 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | AQ - Field Blank Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8270D SW846 3510C | **Percent Solids:** | n/a |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | R103902.D | 1 | 10/31/13 | OYA | 10/29/13 | OP70201 | ER4145 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1000 ml | 1.0 ml |
| Run #2 | | |

**BN PAH List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 83-32-9 | Acenaphthene | ND | 1.0 | 0.26 | ug/l | |
| 120-12-7 | Anthracene | ND | 1.0 | 0.29 | ug/l | |
| 56-55-3 | Benzo(a)anthracene | ND | 1.0 | 0.23 | ug/l | |
| 50-32-8 | Benzo(a)pyrene | ND | 1.0 | 0.23 | ug/l | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 1.0 | 0.46 | ug/l | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 1.0 | 0.51 | ug/l | |
| 218-01-9 | Chrysene | ND | 1.0 | 0.29 | ug/l | |
| 206-44-0 | Fluoranthene | ND | 1.0 | 0.32 | ug/l | |
| 86-73-7 | Fluorene | ND | 1.0 | 0.28 | ug/l | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 1.0 | 0.37 | ug/l | |
| 91-20-3 | Naphthalene | ND | 1.0 | 0.26 | ug/l | |
| 85-01-8 | Phenanthrene | ND | 1.0 | 0.29 | ug/l | |
| 129-00-0 | Pyrene | ND | 1.0 | 0.27 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 90% | | 28-131% |
| 321-60-8 | 2-Fluorobiphenyl | 82% | | 30-121% |
| 1718-51-0 | Terphenyl-d14 | 68% | | 16-147% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | FB10252013 | | |
| **Lab Sample ID:** | JB51293-9 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | AQ - Field Blank Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8015C SW846 3510C | **Percent Solids:** | n/a |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2Y56974.D | 1 | 10/29/13 | AV | 10/28/13 | OP70166 | G2Y2233 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1000 ml | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-DRO (C10-C28) | ND | 0.10 | 0.053 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 73% | | 36-144% |
| 16416-32-3 | Tetracosane-d50 | 55% | | 32-138% |
| 438-22-2 | 5a-Androstane | 49% | | 31-136% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | TB10252013 | | |
| **Lab Sample ID:** | JB51293-10 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | AQ - Trip Blank Soil | **Date Received:** | 10/25/13 |
| **Method:** | DAI BY GC/MS 8260SIM | **Percent Solids:** | n/a |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | H103488.D | 1 | 10/31/13 | KLS | n/a | n/a | EH4576 |
| Run #2 | | | | | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 107-21-1 | Ethylene Glycol | ND | 0.50 | 0.063 | mg/l | |
| 57-55-6 | Propylene Glycol | ND | 0.50 | 0.096 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 111-27-3 | Hexanol | 111% | | 50-150% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | TB10252013 | | |
| **Lab Sample ID:** | JB51293-10 | **Date Sampled:** | 10/25/13 |
| **Matrix:** | AQ - Trip Blank Soil | **Date Received:** | 10/25/13 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | Sunoco - Marcus Hook Facility, PA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 4B35914.D | 1 | 11/02/13 | TP | n/a | n/a | V4B1562 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**Purgeable Aromatics**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | 1.0 | 0.28 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.44 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.21 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.19 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | | 79-117% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 99% | | 72-123% |
| 2037-26-5 | Toluene-D8 | 103% | | 82-118% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | | 75-118% |

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New Jersey ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

ACCUTEST LABORATORIES

SLC
FB
STB

# CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: JB51293

**Client / Reporting Information**

Company Name: STANTEC
Street Address: 1060 ANDREW DR. #140
City: WEST CHESTER State: PA Zip: 19380
Project Contact: JENNIFER MENGES E-mail:
Phone #: 610.840.2500 Fax #:
Sampler(s) Name(s): J. CORBETT / J. RICHTER Phone #:

**Project Information**

Project Name: SUNOCO - MARCUS HOOK
Street:
City: State:
Project #: 213402353
Client Purchase Order #:
Project Manager:

**Billing Information ( if different from Report to)**

Company Name:
Street Address:
City: State: Zip:
Attention:

**Requested Analysis ( see TEST CODE sheet)**

| Accutest Sample # | Field ID / Point of Collection | MEOH/DI Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | HCl | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | METHOD 8260 PROPYLENE GLYCOL ETHYLENE GLYCOL | METHOD 8260 VOCs | METHOD 8270 SVOCs | METHOD 8015 AEO | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MH835-1(1.0-1.5) | | 10.25.13 | 0835 | JC/JR | SO | 1 | | | | | 1 | | | | X | | | | D22 |
| 2 | MH835-2(1.5-2.0) | | 10.25.13 | 0905 | JC/JR | SO | 1 | | | | | 1 | | | | X | | | | 931 |
| 3 | MH835-3(1.75-2.25) | | 10.25.13 | 0920 | JC/JR | SO | 1 | | | | | 1 | | | | X | | | | C36 |
| 4 | MH835-4(1.5-2.0) | | 10.25.13 | 0945 | JC/JR | SO | 1 | | | | | 1 | | | | X | | | | 14A6 |
| 5 | MH813-1(3.0-3.5) | 6562 6559 6560 | 10.25.13 | 1115 | JC/JR | SO | 4 | | | | | 1 | 2 | 1 | | | X | X | X | 4904 |
| 6 | MH813-2(1.5-2.0) | 6568 6573 6574 | 10.25.13 | 1405 | JC/JR | SO | 4 | | | | | 1 | 2 | 1 | | | X | X | X | |
| 7 | MH813-3(1.75-2.25) | 6567 6566 6565 | 10.25.13 | 1255 | JC/JR | SO | 4 | | | | | 1 | 2 | 1 | | | X | X | X | |
| 8 | MH813-4(3.0-3.5) | 6569 6570 6571 | 10.25.13 | 1335 | JC/JR | SO | 4 | | | | | 1 | 2 | 1 | | | X | X | X | SUB |
| 9 | FB102520 13 | | 10.25.13 | 1420 | JC/JR | FB | 10 | 5 | | | | 5 | | | | X | X | X | X | |
| 10 | TB102520 13 | | | | | TB | 2 | 2 | | | | | | | | | X | | | |

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

**Turnaround Time ( Business days)**

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] other _____

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

**Data Deliverable Information**

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" ( Level 2)
- [ ] FULLT1 ( Level 3+4 )
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [X] EDD Format EQUIS
- [ ] Other _____

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

**Comments / Special Instructions**

D.I. slurry VOC vials frozen storage
Date: 10/25 Time: 1900 Initials: _____

10/25

**Sample Custody must be documented below each time samples change possession including courier delivery.**

| | Relinquished by Sampler: | Date Time: | Received By: | Relinquished By: | Date Time: | Received By: |
|---|---|---|---|---|---|---|
| 1 | | 10.25.13 1535 | 1 | 2 | 10/25/13 1705 | 2 |
| 3 | | 10/25/13 1905 | 3 | 4 | Date Time: | 4 |
| 5 | Relinquished by: | Date Time: | 5 | Custody Seal # | [ ] Intact [ ] Not intact | Preserved where applicable: On Ice: Cooler Temp. 2.3 C-IR |

3B

**JB51293: Chain of Custody**
**Page 1 of 2**

# Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** JB51293 **Client:** **Project:**

**Date / Time Received:** 10/25/2013 **Delivery Method:** **Airbill #'s:**

**Cooler Temps (Initial/Adjusted):** #1: (3.3/3.3); 0

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | IR Gun | | |
| 3. Cooler media: | Ice (Bag) | | |
| 4. No. Coolers: | 1 | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☑ | | ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ | | ☐ | ☐ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☑ | | ☐ | ☐ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com



**JB51293: Chain of Custody**
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